

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)

Amendment of the Commission's Rules to)
Provide for Unlicensed NII Devices)
in the 5 GHz Frequency Range)

ET Docket No. 96-102

To: The Commission

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OPPOSITION TO PETITION FOR RECONSIDERATION

The American Radio Relay
League, Incorporated

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SUMMARY

The American Radio Relay League, Incorporated (the League), the national association of amateur radio operators in the United States, submits its Opposition to the Petition for Reconsideration filed in this proceeding by Apple Computer, Inc. (Apple) on or about March 3, 1997.

Apple asks for reconsideration of three portions of the Commission's *Report and Order* in this proceeding, FCC 97-5, released January 9, 1997. The two items of interest to the League are, first, that Apple asks that the Commission's consideration of the use of "more highly directional antennas" for transmitters in the upper NII segment be expedited. It also asks that the peak power spectral density (PSD) limit for NII devices in both the middle and the upper NII segments be increased; the latter to 1 watt in 2 MHz, rather than 1 watt in 20 MHz, as per the *Report and Order*.

Apple provides no interference studies, or even estimates of adverse impact on other radio services with allocation status in the upper NII segment, in support its proposed modifications to the *Report and Order*. Indeed, the Apple reconsideration petition is little more than a "would that it were so" list. There is no indication that the Commission erred in any respect in its conclusions in the *Report and Order*; just an argument that more liberal power and antenna gain regulations would permit greater flexibility in the use of these unlicensed devices in the upper NII segment. The lack of an interference study is exactly the reason why the Commission cannot now simply "expedite" the consideration of higher gain unlicensed NII transmit antennas in this proceeding, because there is no record that could support a different decision.

Apple's failure to prove that interference can and will be avoided with either higher-gain antennas or higher peak Power Spectrum Densities is fatal to its reconsideration petition, and it must be denied.

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To: The Commission

OPPOSITION TO PETITION FOR RECONSIDERATION

The American Radio Relay League, Incorporated (the League), the national association of amateur radio operators in the United States, by counsel and pursuant to Section 1.429(f) of the Commission's Rules [47 C.F.R. §1.429(f)], hereby respectfully submits its Opposition to the Petition for Reconsideration filed in this proceeding by Apple Computer, Inc. (Apple)¹ on or about March 3, 1997. In Opposition to the relief requested by Apple,² the League states as follows:

¹ The Apple Petition was placed on Public Notice by the Commission March 12, 1997. Section 1.429(f) of the Rules requires that oppositions to any petition be filed within 15 days of the date of public notice of the filing of the petition. Accordingly, this Opposition is timely filed.

² There were two other Petitions for Reconsideration filed in this proceeding, by Wireless Information Networks Forum and by the Hewlett-Packard Company. These petitions are not of any concern to the League, as they do not affect amateur operation in the 5.725-5.825 GHz segment (herein referred to as the "Upper-NII Band").

1. Apple asks for reconsideration of three portions of the Commission's *Report and Order* in this proceeding, FCC 97-5, released January 9, 1997. First, it asks that the Commission's consideration of the use of "more highly directional antennas" for transmitters in the upper NII segment be expedited. Second, it asks for amendment of the antenna directionality rules for the middle NII segment established in the *Report and Order*, at 5.250-5.350 GHz. Third, it asks that the peak power spectral density (PSD) limit for NII devices in both the middle and the upper NII segments be increased; the latter to 1 watt in 2 MHz, rather than 1 watt in 20 MHz, as per the *Report and Order*.³

2. The League is concerned only with the first and third of these issues, and interposes no objection to the Apple reconsideration petition relative to the second point, as the middle NII segment is not an amateur allocation. It is noteworthy, nonetheless, that Apple provides no interference studies, or even estimates of adverse impact on other radio services with allocation status in the upper NII segment, in support of its proposed modifications to the *Report and Order*. Indeed, the Apple reconsideration petition is little more than a "would that it were so" list. There is no indication that the Commission erred in any respect in its conclusions in the *Report and Order*; just an

³ As to this, Apple states that the *Report and Order* permits NII devices operating in the upper band to employ a peak PSD of 50 mW/MHz for an antenna gain of (up to) 6 dBi. *Report and Order*, at Paragraph 49. This corresponds to a PSD of 1 watt in 20 MHz for the same antenna gain.

argument that more liberal power and antenna gain regulations would permit greater flexibility in the use of these unlicensed devices in the upper NII segment. That can be assumed to be the case, but it does not address interference to radio services with allocation status in the band segment.

3. With respect to the argument that consideration of higher-gain antennas at 5725-5825 MHz should be expedited, Apple has chosen the wrong proceeding to make that argument. Apple claims that the Commission "recognized that it may be appropriate to further accommodate community networking by permitting U-NII devices operating in the 5725-5825 MHz band to use more highly directional antennas than are permitted under the current rules." Actually, what the Commission stated in the *Report and Order* was as follows:

In ET Docket No. 96-8, we are currently considering whether to authorize the use of transmitting antennas with higher gain for Part 15 spread spectrum operations in this band. If we decide in that proceeding to permit the use of higher antenna gain for spread spectrum operations, we may consider similar action for U-NII devices in this band in a separate rule making. However, we note that permitting use of high gain antennas with U-NII devices without requiring an equal reduction in power could have a significant impact on the interference environment in this band, and this issue would have to be addressed should a further rule making be initiated.

Report and Order, at para. 47.

4. This specific refusal of the Commission to address high-gain antennas for NII devices in this proceeding was, at least in part, an acknowledgement of the League's argument that permitting the power of unlicensed NII devices to exceed that for Part 15 devices generally, or to permit high gain antennas by non-spread-

spectrum NII devices would represent a significant departure from the underlying precepts of Part 15 regulation, which require unlicensed operations not to cause interference to other services. Indeed, the Commission's *Report and Order* constitutes a balance between maximum flexibility for NII devices on the one hand, and protection against interference to licensed radio services on the other:

We find a balance between providing sufficient power limits for U-NII devices and protecting primary operations may be struck by adopting different power levels for U-NII devices in each of the three 100 MHz bands. This approach will provide the needed flexibility to allow U-NII proponents to design and manufacture equipment to meet a variety of communications needs while ensuring a successful spectrum sharing environment with other spectrum users.

Report and Order, at para. 42.

Specifically with respect to high-gain transmitting antennas,⁴ the Commission specifically found that the 6 dBi gain antennas permitted for Part 15 spread-spectrum (SS) devices would be sufficient to permit a range of several kilometers. It acknowledged that several commenters had urged the use of even higher gain antennas, but that:

However, the record in this proceeding does not provide enough technical support for us to conclude that U-NII devices with 1 W transmitter power and high gain transmit antennas would not cause interference to the primary service, Government radiolocation. Specifically, NTIA has expressed concern about higher powers in this band and

⁴ The Commission specifically recommended the use of high-gain receive antennas in rural areas, where ambient noise levels are low. It noted that high-gain receive antennas are not useful in areas where ambient noise is high, such as urbanized areas where there are larger numbers of such devices operating co-channel.

supports further experimentation before either higher power or gain is authorized.

Id., at para. 46.

Indeed, Apple's Petition for Reconsideration offers nothing to improve the record in this respect: the lack of an interference study is exactly the reason why the Commission cannot now simply "expedite" the consideration of higher gain unlicensed NII transmit antennas in this proceeding, because there is no record that could support a different decision. Apple has offered nothing that could possibly cause the Commission to reconsider its decision in this respect. If Apple is willing to conduct actual interference tests, the results thereof might be helpful in addressing proper limits on unlicensed NII device transmit antenna gain. Given the foregoing, Apple's contention that there is "no need for the Commission to start a new proceeding or to defer, until after a decision has been issued in the spread spectrum proceeding, its consideration of whether to permit higher gain antennas for U-NII devices operating in the 5725-5825 MHz band" is not at all well-taken.

5. Finally on this subject, the Commission found that the principal reason why amateur stations could successfully share the 5.725-5.825 MHz segment with unlicensed NII devices was because of the "relatively low power with which U-NII devices will operate".⁵ If the effective radiated power levels are significantly increased by means of high-gain transmit antennas, the express finding of compatibility with amateur operations in the upper NII segment is

⁵ *Id.*, at para. 47.

vitiated. Indeed, the limitation of antenna gain is an important enough component of the NII authorization in the upper segment that the Commission required all NII transmitting antennas to be an integral part of the device itself. This would make it impossible for part 15 users to incorporate higher gain antennas into particular installations.

6. The third of Apple's reconsideration requests is that the Commission should amend the peak PSD limits for each of the unlicensed NII segments. The *Report and Order* states that the peak power spectral density limits were imposed to ensure that the power transmitted by unlicensed NII devices is evenly spread over the emission bandwidth. Specifically, it is required that the devices decrease transmitter output power proportionally to any decrease in emission bandwidth below 20 MHz. These requirements "will decrease the potential for interference to other services and will encourage the use of the U-NII bands for the broadband operations for which they are intended." *Id.*, at para. 49. In the upper NII segment, the peak PSD is 50 mW/MHz for an antenna gain of 6 dBi. Antenna gains exceeding that level are permitted, if the peak PSD is reduced by the same amount of the antenna gain over 6 dBi.

7. Apple again makes no technical argument whatsoever that NII devices operating at greater PSDs will be compatible with licensed services on the same frequencies. In fact, it offers no argument at all, save for its suggestion that power density is a major determinant of the distances that can be achieved for line-of-sight paths, and that greater distance for unlicensed NII devices is

desirable from Apple's point of view. Power reductions accompanying bandwidth reductions indeed offer no "tradeoff" in terms of achievable transmit range, but that was the exact intention of the Commission in this proceeding:

While we agree that some of the communications requirements, particularly the longer range community networks, could be partially accommodated through licensed services, such as the fixed point-to-point and point-to-multipoint services, we believe that the unlicensed devices contemplated here will both complement and provide a cost-effective alternative to such services....Accordingly, we believe that some spectrum should be available to accommodate some of the longer range community network requirements envisioned by the U-NII proponents.

Report and Order, at para. 18.

Footnote 39 to that paragraph states: "As addressed below, the power limits we are adopting here will generally limit the longer range community networks to several kilometers." Further, at paragraph 27, the Commission states: "We are also cognizant, however, of the need for U-NII devices to share the spectrum with primary services⁶ without causing radio interference to those services. We believe that both of these concerns can be accommodated by adopting appropriate technical restrictions for U-

⁶ The reference to "primary services" is inaccurate, of course. The obligation of Part 15 device users is to protect all licensed radio services with primary or secondary allocations on the same frequencies. Paragraph 93 of the Report and Order clarifies the absolute obligation of U-NII devices to protect all licensed radio services against interference.

NII devices, particularly transmit power and out-of-band emission limits..."⁷

8. By submitting a petition for reconsideration without any technical showing that increased peak PSDs will not result in interference to licensed services such as amateur operations in the upper NII segment, Apple is therefore in the position of questioning the entire basis for the authorization of these Part 15 devices in the upper band in the first place. The Commission has in this proceeding expressly rejected Apple's "Part 16" unlicensed but protected regulatory scheme, and has determined, as it must by statute, that unlicensed NII devices must operate on a non-interference basis. The Commission as it is has allowed greater power for these devices in the upper segment than was proposed in the Notice of Proposed Rule Making in this proceeding. In doing so, it runs the as-yet untested risk of interference from these devices to licensed radio services. If Apple believes that the Commission did not go far enough to permit unlicensed devices to operate in the same manner as licensed radio transmitters, then it must either: 1) prove that the increased PSDs will not interfere with licensed radio services (which it has not even tried to do), or 2) argue that unlicensed NII devices should be accommodated under an entirely different regulatory scheme than that which is the underpinning of the entire *Report and Order* in this proceeding,

⁷ *Id.*, at para. 27.

(and which would require the rescission of the *Report and Order* in its entirety).

9. In conclusion, Apple now, and from the beginning, has asked to have its cake and eat it too: it wishes to have all of the benefits of unlicensed operation for NII devices, and the functionality of licensed transmitters, but none of the attendant interference avoidance obligations. The Commission has affirmatively rejected in this proceeding, *de jure*, the Part 16 regulatory hybrid concept for unlicensed devices, and yet Apple asks, on reconsideration, for essentially the same regulatory treatment *de facto*, without offering a shred of technical justification.

10. As the League has repeatedly noted in this proceeding, the Communications Act of 1934 is devoid of any authority to authorize Part 15 type devices in the high power configuration that Apple has sought and now seeks on reconsideration. The only authority to permit unlicensed devices under the Act is with respect to radio control and citizen's radio service facilities. 47 U.S.C. §307(e). The only provision for Part 15 devices in the Communications Act is for the Commission to regulate the interference potential of such devices by "reasonable regulation". 47 U.S.C. §302. This the Commission has done by permitting operation of such devices in bands allocated, on a primary basis, to one or more licensed radio services, where the operation of the unlicensed devices has been determined to be unlikely to cause interference to the licensed radio services. The benefits to the manufacturers of such non-

licensed devices under the circumstances are several: their products need not be licensed before they can be used by the purchasers thereof; the equipment itself need only be authorized by the Commission by type, pursuant to Part 2 Equipment Authorization requirements; they can operate with some degree of frequency agility and bandwidth variability; and they can be used for an infinite number of purposes, without any eligibility determinations on the part of the user. The devices can be made less expensively, and operated without regulatory effort by the owner. These benefits are at the cost of an absence of any priority in the subject bands relative to licensed radio services, and the absolute obligation to avoid causing interference to licensed services. Apple's failure to prove that interference can and will be avoided with either higher-gain antennas or higher peak PSDs is fatal to its reconsideration petition, and it must be denied.

Therefore, the foregoing considered, the American Radio Relay League, Incorporated requests that the Commission deny or dismiss the Apple Computer, Inc. Petition for Reconsideration forthwith,

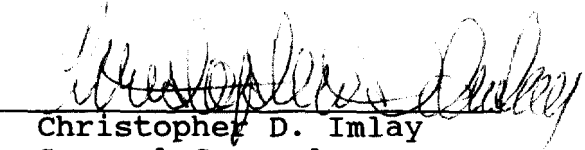
and make no change in the Report and Order relative to the 5725-5875 MHz bands.

Respectfully submitted,

**THE AMERICAN RADIO RELAY
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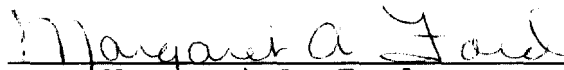
March 27, 1997

CERTIFICATE OF SERVICE

I, Margaret A. Ford, Office Manager of the law firm of Booth, Freret Imlay & Tepper, P.C., do certify that copies of the foregoing Opposition to Petition for Reconsideration were mailed this 27th day of March, 1997, via U. S. Mail, postage prepaid, first class, to the offices of the following:

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